Surname	Centre Number	Candidate Number
First name(s)		0

GCSE

3300U30-1

S24-3300U30-1

THURSDAY, 16 MAY 2024 – MORNING

MATHEMATICS
UNIT 1: NON-CALCULATOR
INTERMEDIATE TIER

1 hour 45 minutes

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the additional page at the back of the booklet. Question numbers must be given for all work written on the additional page.

Take π as 3·14.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

In question **11**, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**6**	
2.	**2**	
3.	**3**	
4.	**5**	
5.	**4**	
6.	**4**	
7.	**4**	
8.	**7**	
9.	**5**	
10.	**6**	
11.	**6**	
12.	**3**	
13.	**5**	
14.	**5**	
15.	**4**	
16.	**3**	
17.	**3**	
18.	**5**	
Total	**80**	

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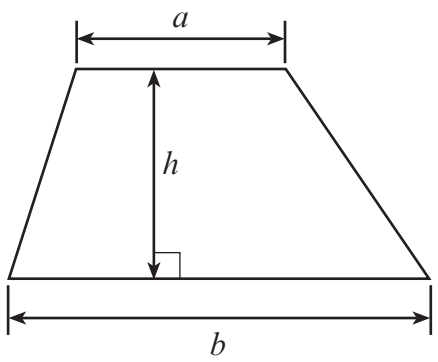
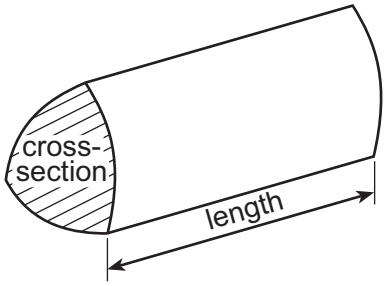
Formula List – Intermediate Tier

Area of trapezium $= \frac{1}{2}(a + b)h$



Volume of prism = area of cross-section × length



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1. (a) Evaluate each of the following.

(i) $9^2 \times 10^3$ [2]

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(ii) $0{\cdot}8 \times 0{\cdot}25$ [1]

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(iii) $13{\cdot}4 - 2{\cdot}96$ [1]

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(b) Evaluate $\frac{2}{7} \times \frac{1}{4}$.

Give your answer as a fraction in its simplest form. [2]

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2. (a) Which of the following is the nearest value to 488 grams?
Circle the correct answer. [1]

0·5 kg 500 kg 50 kg 5 tonnes 0·05 kg

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(b) Circle the correct answer for the following. [1]
15 miles is approximately equal to

1500 m 24 km 15 km 2·4 km 3000 m

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3. The nth term of a sequence is given by $5n - 1$.

Calculate the sum of the first three terms.
You must show all your working. [3]

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Sum of the first three terms = ...

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4. In the diagram below, *ABC* is a right-angled triangle and *CDE* is an isosceles triangle.

$A\hat{B}C = 90°$, $B\hat{A}C = 64°$ and $CD = CE$.
AD and *BE* are straight lines intersecting at *C*.

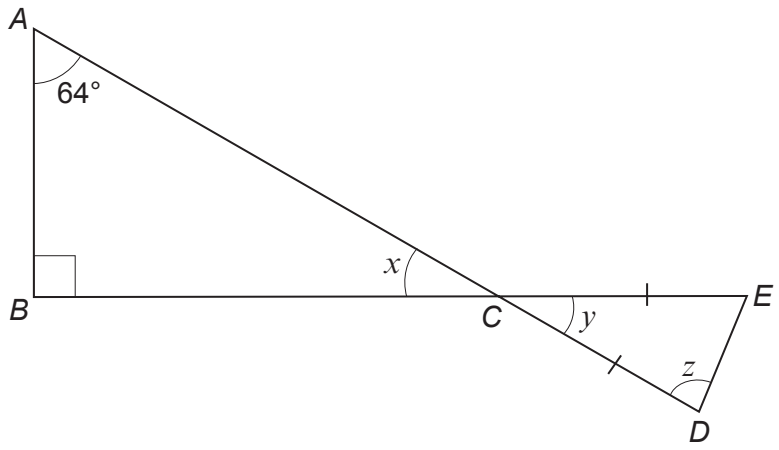

Diagram not drawn to scale

Calculate the size of each of the angles x, y and z. [5]

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x = ... ° y = ... ° z = ... °

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5. In a game, each competitor will have 20 attempts at throwing a ball into a bucket.
They will get 1 point for every ball that lands in the bucket.

Sioned wants to keep a record of the total points for each competitor.
She decides to show the results in a table with the total points recorded in **groups of equal width**.

(a) She starts to draw a table using five groups, as shown below.

Total points	0 to 3	4 to 7	8 to 11	… to …	… to …
Number of competitors					

Explain why these groups will not be suitable. [1]

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(b) Sioned considers using the table shown below.
She decides that it is suitable for recording all the total points in **groups of equal width**.
Fill in the two missing numbers in the **top** row. [1]

Total points	0 to 6	7 to	..... to 20
Number of competitors			

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(c) Finally, Sioned decides to use the groups shown in the table below.
The results for the first 100 competitors are shown in the table.

Total points	0 to 2	3 to 5	6 to 8	9 to 11	12 to 14	15 to 17	18 to 20
Number of competitors	5	10	17	22	23	12	11

One of these 100 competitors is chosen at random.

(i) What is the probability that this competitor scored 6, 7 or 8 points? [1]

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(ii) Explain why the following statement may be incorrect. [1]

The probability that this competitor scored 19 points is $\frac{11}{100}$.

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6. (a) Express 96 as a percentage of 300. [2]

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(b) Share £48 in the ratio 1 : 7. [2]

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7. (a) Factorise each of the following.

(i) $14a - 35$ [1]

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(ii) $5x + x^2$ [1]

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(b) Solve the following equation. [2]

$$\frac{x}{3} + 5 = 9$$

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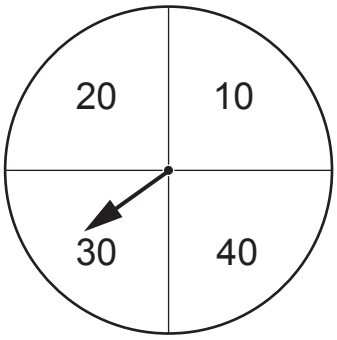
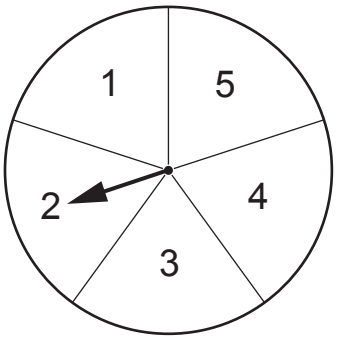
8. Ahmed organises a game using two fair spinners, as shown below.
The first spinner shows the values 10, 20, 30 and 40.
The second spinner shows the values 1, 2, 3, 4 and 5.





In the game, the two spinners are spun and the values shown are added to give a score.
For example, the spinners above score 32.

Ahmed charges £1 for each attempt at the game.
Any player who scores **43 or more** wins £5.

Calculate Ahmed's expected profit when this game is played 100 times. [7]

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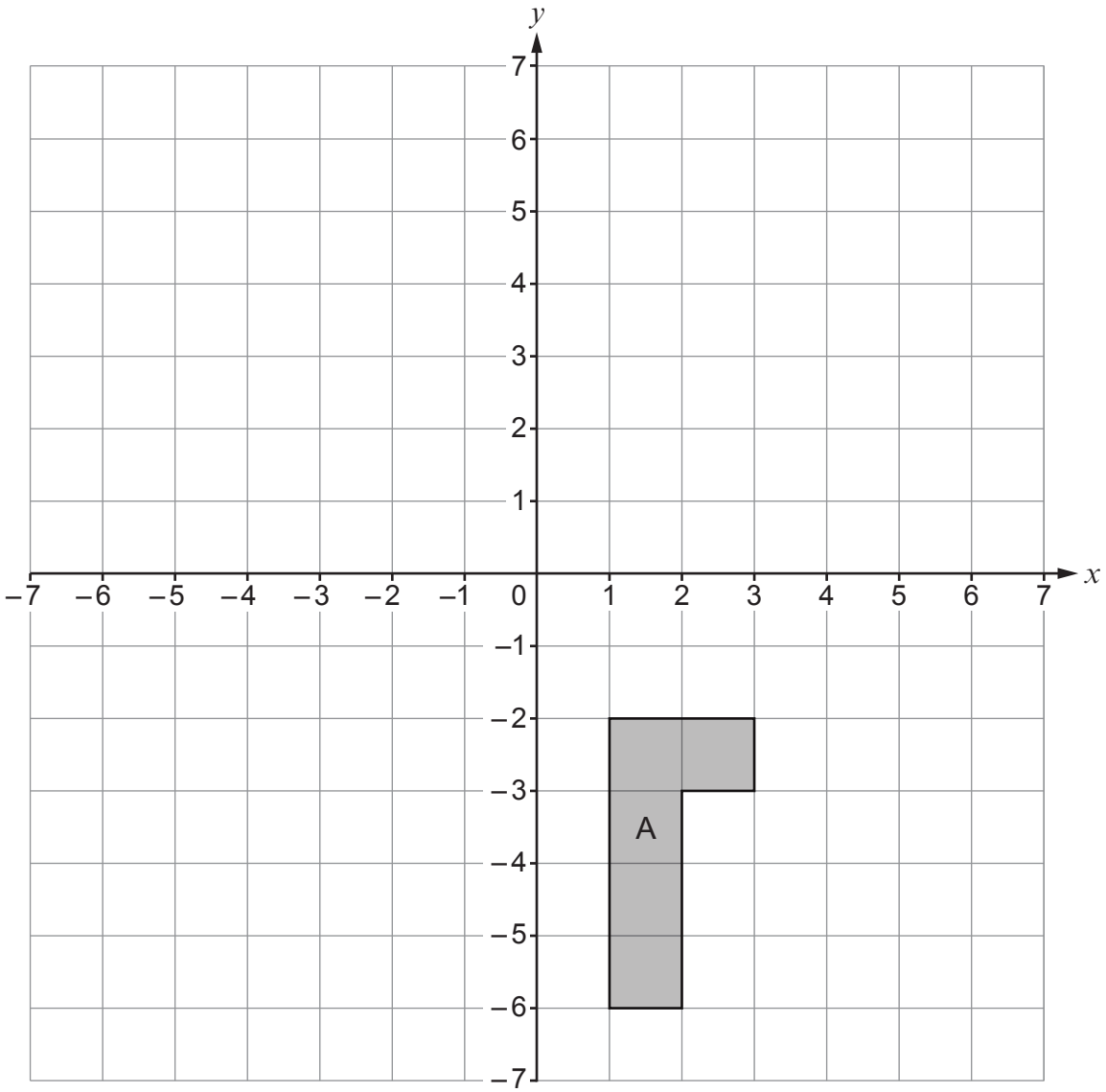
9. (a) Reflect the shape A in the line $x = -1$. [2]



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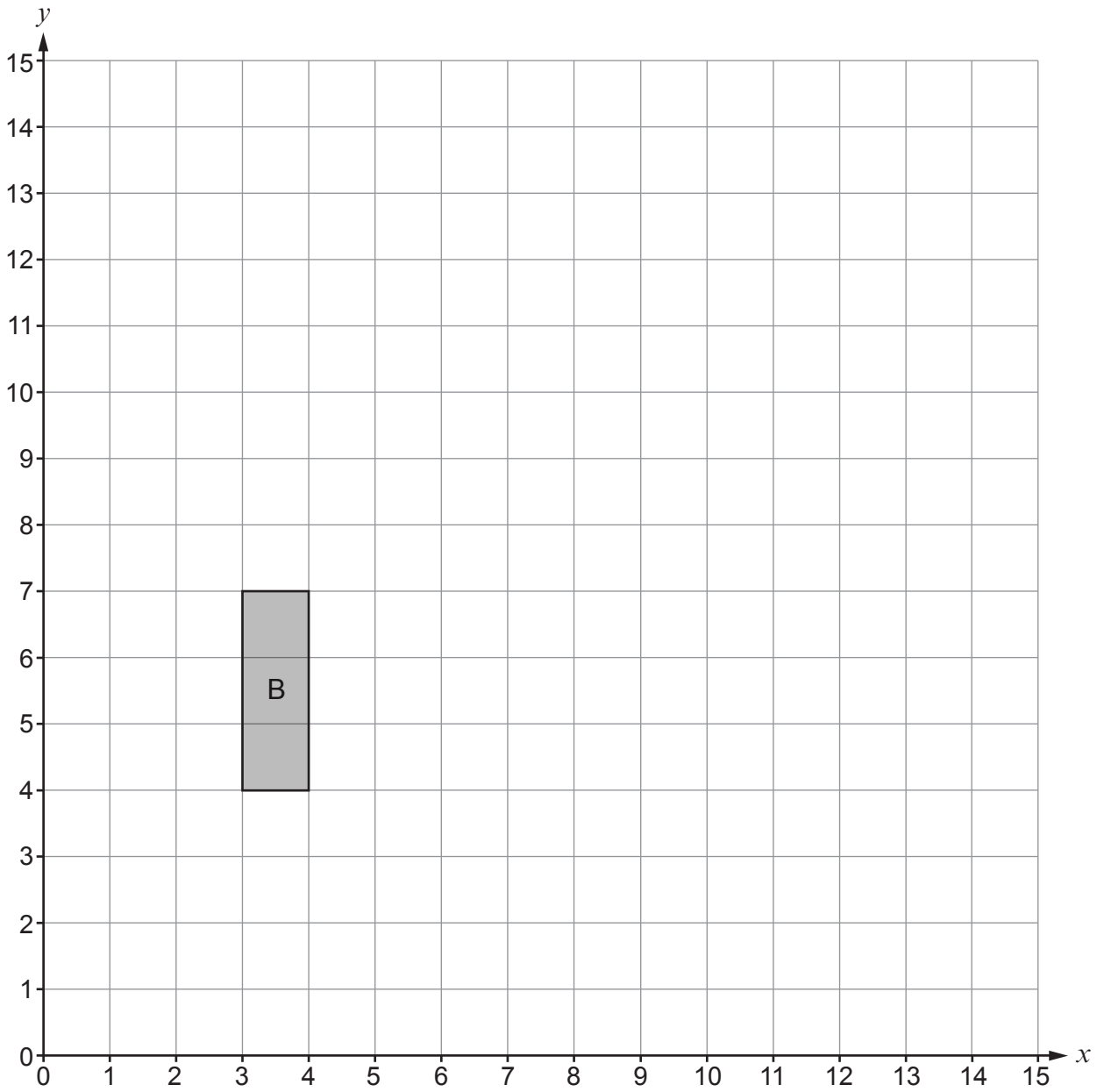
(b) Enlarge the shape B by a scale factor of 2, using (1, 3) as the centre of enlargement. [3]



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10. (a) Write the reciprocal of 4 as a decimal. [1]

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(b) Estimate the value of $\frac{79{\cdot}34}{40{\cdot}1 \times 0{\cdot}48}$.

You must show all your approximations in your working. [2]

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(c) Evaluate

$$1\frac{5}{7} + 2\frac{11}{14}.$$

Give your answer in its simplest form. [3]

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Examiner only

11. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

The right-angled triangle ABC is a cross-section of a prism, as shown below.

AB = 9 cm, BC = 10 cm and $A\hat{B}C$ = 90°.
The length of the prism is 20 cm.

Calculate the volume of the prism.
You must show all your working. [4 + 2 OCW]

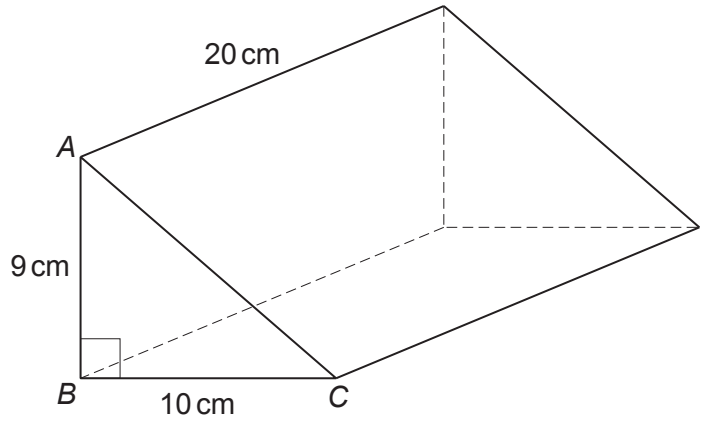

Diagram not drawn to scale

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12. Point *P* lies on:

- the bisector of angle *ABC*
- the perpendicular bisector of line *BC*.

Using only a ruler and a pair of compasses, **construct** suitable lines and arcs to show the position of point *P*.

Construction arcs must be clearly shown. [3]

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13. The diagram below shows a shape made by joining two rectangles together.
The area of the whole shape is 89 cm^2.

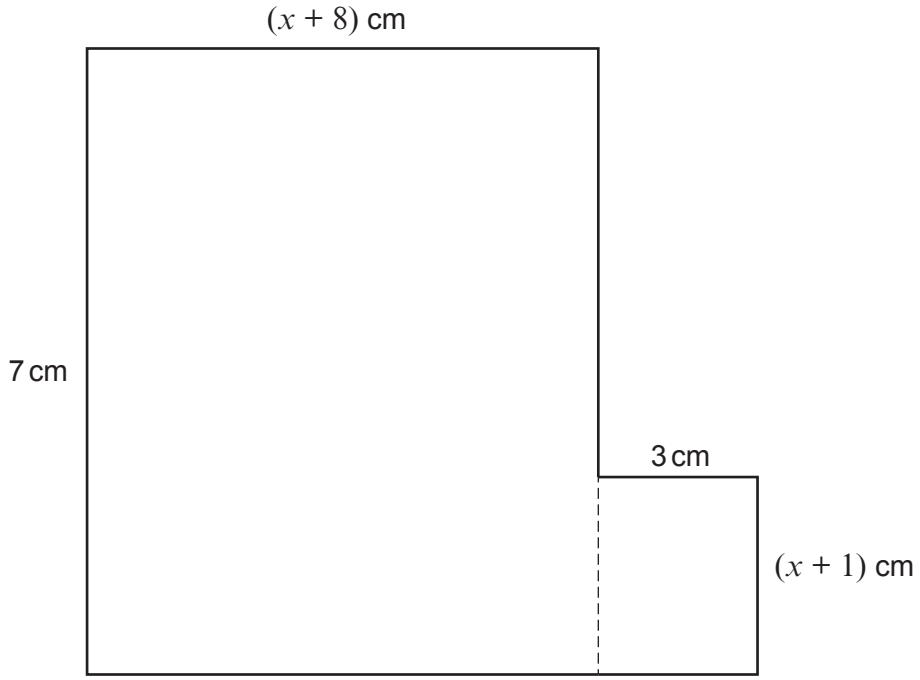

Diagram not drawn to scale

Form and solve an equation to find the value of x. [5]

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14.

Lowest common multiple (LCM) of 10 and 18	=	n	×	Highest common factor (HCF) of 30 and 72

Calculate the value of n.
You must show all your working. [5]

n = ...

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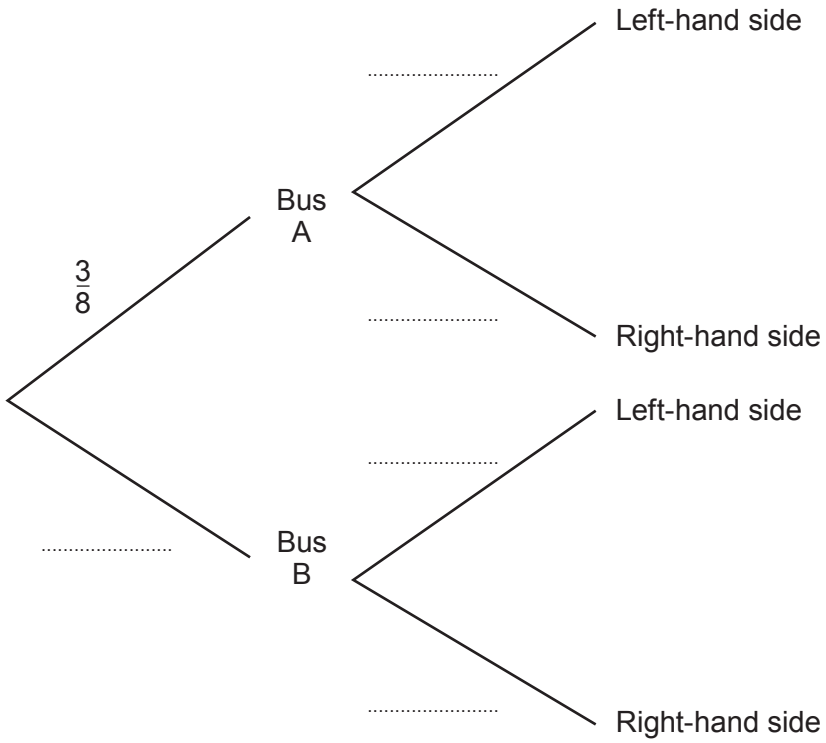
15. A group of people hired two buses, Bus A and Bus B, to take them home from a party.
Bus A left the party at 11:00 p.m.
Bus B left the party at midnight.

A person from the group is chosen at random.
The probability that this person left the party on Bus A is $\frac{3}{8}$.

The probability that this person sat on the left-hand side of the bus is equal to the probability that this person sat on the right-hand side.

(a) Complete the following tree diagram. [2]



(b) What is the probability that this person sat on the right-hand side of the bus that left at midnight? [2]

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16. (a) Express 0·0057 in standard form. [1]

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(b) Calculate the value of $\frac{2\times10^{4}}{5\times10^{-3}}$.

Give your answer in standard form. [2]

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17. A car travels a distance of x miles in 2 hours.
In the next hour, it travels a further distance of 36 miles.

Its average speed for the whole journey is 42 mph.

Calculate the value of x.
You must show all your working. [3]

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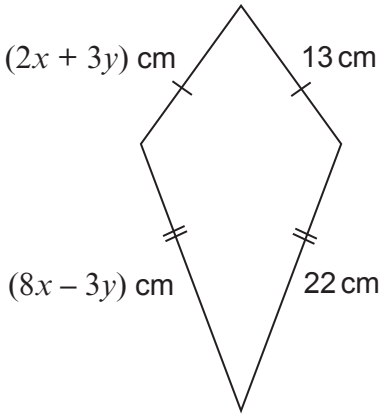
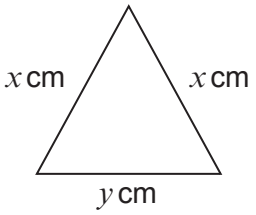
18. A kite and an isosceles triangle are shown below.
They are not drawn to the same scale.





Diagrams not drawn to scale

Using the information shown on the kite, calculate the perimeter of the isosceles triangle.
Do not use a trial and improvement method.
You must show all your working. [5]

Perimeter of the isosceles triangle = ... cm

END OF PAPER

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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